

PRESERVATION OF BIOLOGICAL SPECIMENS IN PLASTICS

The United States Department of Agriculture recently published, as Miscellaneous Publication No. 679, a comprehensive bulletin on the "Preservation of Agricultural Specimens in Plastics," by G. R. Fessenden of the Bureau of Agricultural and Industrial Chemistry. This bulletin deals with preservation of plant specimens and with the embedment of biological specimens in plastic blocks, all in considerable detail. The procedure for embedding biological specimens in blocks of methacrylate plastic involves the removal of the inhibitor from monomer; the addition of a catalyst to monomer; the preparation of partially polymerized casting sirup; casting plastic base in mold for specimen; dehydration and preparation of specimen for embedment; embedding specimen and polymerizing plastic around it; heat-treating polymer to prevent surface cracks later; removing cast blocks; and machining and polishing the finished block. Methyl and ethyl methacrylates in the monomeric state are mobile, inflammable liquids which give off toxic and combustible vapors. Because these monomers polymerize at room temperatures the manufacturer adds hydroquinone as a stabilizer or inhibitor. This has to be removed by distillation or by alkali extraction before the methacrylate monomer can be hardened. Next, in order to facilitate polymerization, benzoyl peroxide as an oxidizing catalyst has to be added, and this also is a fire hazard. Then the catalyzed monomer is converted to a sirupy form by moderate heat by means of a water bath. Specimens for embedment have to be cleaned and dehydrated and many other operations are needed before the work is completed. Some of the work must be done under a fume hood provided with an exhaust fan, and where an exhaust system is lacking the operator should be protected by an air-line gas mask. Fire extinguishers should be handy. Open flames are out; concentrations of vapor must not be inhaled; and various other precautions are necessary. After reading Mr. Fessenden's detailed and explicit bulletin, I have come to the conclusion that the preservation of specimens in plastics is not, by any means a kitchen hobby. It should be done only where adequate laboratory facilities are available and by persons who are fully aware of the characteristics of the materials with which they are working.—H. B. W.